

HEALTH ANXIETY AND HYPOCHONDRIACAL TRAITS:
AN INTERPERSONAL PERSPECTIVE ON EXCESSIVE
SOMATIC CONCERNS AND COMPLAINTS

by

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ABSTRACT

Hypochondriasis is a complex disorder that has considerable impact on healthcare utilization and costs. Recent conceptualizations of hypochondriasis posit that it is a multicomponent construct, which varies along a continuum of severity. Cognitive-behavioral theory is the predominant conceptualization of hypochondriasis, but recent theoretical developments posit important interpersonal factors in the development and maintenance of the disorder resulting in an interpersonal model of hypochondriasis.

The purpose of the current study was to replicate and extend the interpersonal model. One hundred twenty-two undergraduate students were asked to complete self-report measures assessing demographic information, hypochondriacal tendencies, interpersonal traits and problems, interpersonal correlates, attachment, and personality. The multicomponent aspect of hypochondriasis was confirmed in which distinct patterns of correlations emerged among the various components and interpersonal correlates.

The conviction component of hypochondriasis—the belief that one is really sick along with the frustration that others do not recognize this—was associated with the predicted hostile-submissive interpersonal style. Hypochondriacal tendencies were also associated with insecure, anxious attachment, interpersonal problems, increased loneliness and interpersonal stress, and decreased social support. The findings indicate that the interpersonal model of hypochondriasis might be refined by considering its multiple components, particularly the conviction component.

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INTRODUCTION

Individuals with excessive concerns about physical symptoms, fears of illness, and medically unjustified convictions that they suffer from serious disease have perplexed societies for thousands of years. In the United States today, these problems are increasingly pressing as already burdensome healthcare costs continue to rise (Levit, Smith, Cowan, Sensenig, & Catlin, 2004). Hypochondriacal individuals use health care resources excessively, well beyond any psychiatric or medical comorbidities (Barsky, Ettner, Horsky, & Bates, 2001; Barsky, Orav, & Bates, 2005). Psychological and pharmacological treatments for health anxiety and hypochondriasis can reduce health care costs and utilization (Mumford, Schlesinger, Glass, Patrick, & Cuerdon, 1984; Simon, VonKorff, & Barlow, 1995; Thompson, et al., 1998), and refinement of our understanding of these conditions may lead to further improvements in patient management.

Excessive concerns with physical health and over-utilization of medical care occur in a variety of conditions. Some reach the level of diagnosable psychiatric disorders, but subclinical syndromes are also important because levels of impairment and burden on the healthcare system can approach that seen in clinical syndromes (Katon, Lin, von Korff, & Russo, 1991). In the DSM-IV-TR criteria (American Psychiatric Association, 2000), a key distinction between the disorder of hypochondriasis and related but subclinical levels of health anxiety involves responses to reassurance (Marcus,

Gurley, Marchi, & Bauer, 2007; P. G. Williams, 2004). People with subthreshold health anxiety are typically comforted when reassured by physicians; whereas those with diagnosable hypochondriasis are not because they remain convinced they have a disease. Importantly, health anxiety can also be a prominent feature in other anxiety disorders, including panic disorder, illness/disease phobias, obsessive-compulsive disorder, and generalized anxiety disorder (Abramowitz, Brigidi, & Foa, 1999; Fava, et al., 2006; Warwick, 1995).

A Multicomponent Condition

Though it has a rich history, research on hypochondriasis has often suffered from imprecise conceptualizations. Given its complexity and varying manifestations, hypochondriasis should be seen as a multidimensional construct that also varies along a continuum of severity. However, there are widely varying descriptions of the number and nature of these components. One conceptualization, for example, described nine components (Kellner, Abbott, Winslow, & Pathak, 1987), though most postulate fewer. Starcevic (2001) postulates six components: a) bodily symptoms; b) bodily preoccupation; c) fearful concern that a disease is present; d) disease suspicion; e) resistance to routine medical reassurance; and f) hypochondriacal behaviors such as avoidance of disease related stimuli, bodily checking, and reassurance seeking.

A number of factor analytic studies have identified one or more of these components. Pilowsky (1967, 1968) described three factors, labeled “disease conviction,” “disease phobia,” and “somatic preoccupation.” The measure he developed, the Whiteley Index (WI), was based on this theoretical model, and subsequent studies have confirmed

Pilowsky's structural model (Hiller, Rief, & Fichter, 2002; Hinz, Rief, & Brähler, 2003; Rief, Hiller, Geissner, & Fichter, 1994)

Based on their review of the literature, Longley et al. (2005) postulated a four-factor model of the hypochondriasis domain, consisting of affective, cognitive, behavioral, and perceptual components. They used the WI (Pilowsky, 1967), Somatosensory Amplification Scale (Barsky, Wyshak, & Klerman, 1990), the Illness Attitude Scales (Kellner, 1987), and the Health Anxiety Questionnaire (Lucock & Morley, 1996) to assess these domains, as well as a new measure they were developing, the Multidimensional Inventory of Hypochondriacal Traits (MIHT). Using factor analysis to identify items loading on target factors with minimal cross-loadings and redundancy, Longley et al. (2005) developed scales for each of these four domains. Construct validity for the MIHT was supported by convergence between MIHT components and similar factors from other measures of hypochondriacal tendencies (with the exception of the behavioral component), and associations with health care utilization and somatic symptom reporting. Their findings support a multicomponent model of hypochondriasis, and the factor structure of the MIHT has been independently confirmed (Stewart, Sherry, Watt, Grant, & Hadjistavropoulos, 2008).

The Cognitive-Behavioral Perspective

Different conceptual approaches to hypochondriasis lead to different emphases and descriptions of these various components. Currently, cognitive-behavioral (CB) perspectives are the predominant approach to conceptualizing and treating hypochondriasis and health anxiety. The CB model emphasizes health-related beliefs, cognitive appraisals, and attention (Marcus, et al., 2007; Salkovskis & Warwick, 2001; P.

G. Williams, 2004). For example, there is an element of hypochondriasis that is of a perceptual nature, or what Barsky and Wyshak (1990) call “somatosensory.” This element is an amalgamation of the components of “bodily symptoms” and “bodily preoccupation” that Starcevic distinguished (2001). In hypochondriasis, somatosensory information is appraised as symptoms of a disease, leading to increased attention to bodily cues, misinterpretations, and catastrophic thoughts. CB treatment involves relaxation training, education, distraction, and an evaluation of the thought processes that contribute to the etiology and maintenance of health anxiety (Barsky, 1998; Looper & Kirmayer, 2002).

There is substantial empirical support for CB conceptualizations of hypochondriasis. Hypochondriacal individuals do pay more attention to bodily symptoms, and compared to nonhealth anxious individuals, they report more bodily symptoms despite the fact that there are no differences in the presence or absence of medical disorders in these individuals (Barsky, Wyshak, & Klerman, 1986; Haenen, Schmidt, Kroeze, & van den Hout, 1996). Catastrophic misinterpretations of these bodily states, fearing the worst, and underestimating one’s ability to cope with feared outcomes lead to increased illness worry and increased attentional resources on bodily states, which further maintains the disorder (Hadjistavropoulos, Craig, & Hadjistavropoulos, 1998; Hadjistavropoulos, Hadjistavropoulos, & Quine, 2000; Salkovskis, Warwick, & Deale, 2003). These cognitive and attentional processes can lead to illness behaviors such as reassurance seeking, bodily checking, and/or avoidance of illness-related stimuli (Owens, Asmundson, Hadjistavropoulos, & Owens, 2004; C. Williams, 1997). CB treatment of hypochondriasis is effective (Wattar, et al., 2005).

The Interpersonal Perspective

Interpersonal (IP) perspectives on the development, maintenance, and treatment of hypochondriasis have recently been forwarded to augment CB conceptualizations (Noyes, et al., 2003; P. G. Williams, Smith, & Jordan, in press). IP approaches in psychiatry and clinical psychology have a rich history (Horowitz, 2004; Kiesler, 1996). Most IP approaches begin with the assumption that attachment is the foundational relationship on which future adaptive and maladaptive emotional and IP functioning is based (Horowitz, 2004). Generally, IP theorists have looked to attachment theory to delineate the source of individual differences in social behavior or IP styles, and attachment theory and IP theory have been integrated in the study of social development (Tesch, 1989). Importantly, Bowlby (1988) suggested that pain and illness are childhood circumstances that activate attachment behaviors in the parent-child IP context. When an infant or child experiences pain or an illness, behaviors such as crying or physiological manifestations such as fever are meant to elicit care from parents. In response, the child is comforted and his or her symptoms can be alleviated. These illness behaviors can serve as an IP pattern for managing attachment insecurity, albeit indirectly (Noyes, Stuart, & Watson, 2008).

The primary structural component of the IP perspective maintains that two orthogonal dimensions characterize human social behavior (Leary, 1957; Wiggins, 1996), affiliation (i.e., friendliness vs. hostility) and control (i.e., dominance vs. submissiveness), forming the interpersonal circumplex (IPC) (see Figure 1). The IPC can be used to describe individual differences in social behavior, or IP styles (Wiggins & Broughton, 1985, 1991), serving as a nomological net in which to compare and contrast

individual differences variables (Gurtman, 1991). For example, by correlating a given measure of health anxiety or hypochondriacal traits with both dimensions of the IPC, the IP style associated with these individual differences can be identified. Because neuroticism is generally associated with a hostile submissive style (Wiggins & Broughton, 1991), a similar style seems likely in the case of some hypochondriacal traits but multiple IP styles may be present given the various components of hypochondriasis.

The IPC is central to a second major tenet of IP theory—the principle of complementarity (Kiesler, 1983; Locke & Sadler, 2007; Markey, Funder, & Ozer, 2003). This principle states that friendly IP behavior invites or “pulls” for friendly behavior from

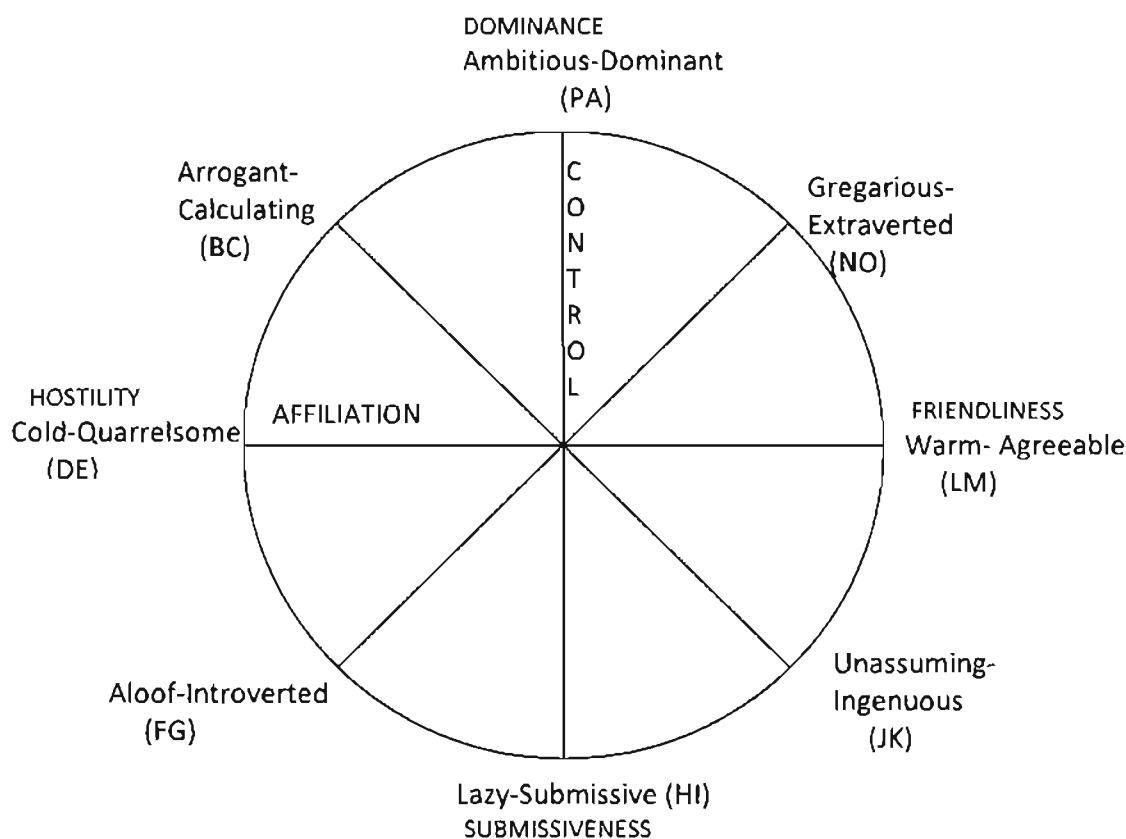
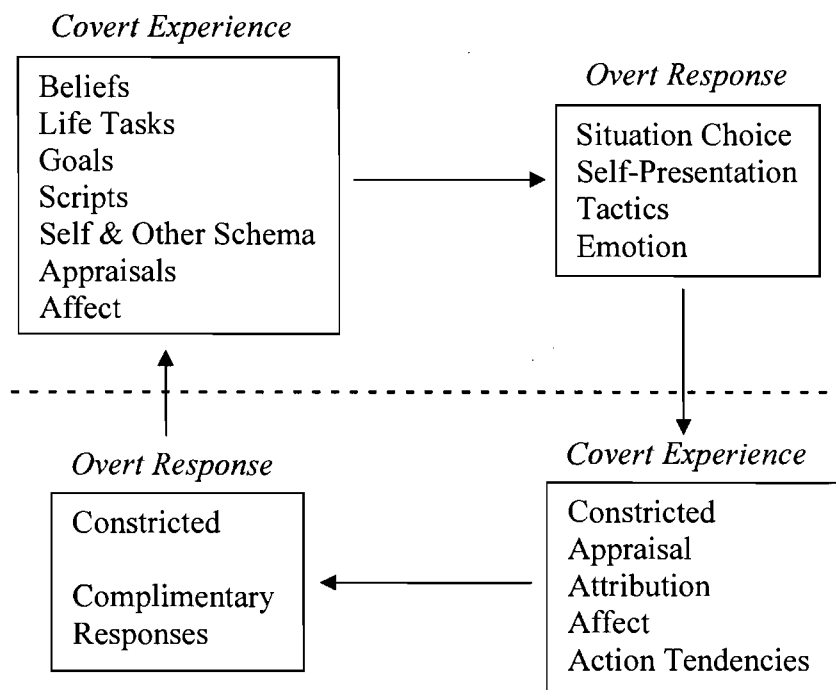


Figure 1. The Interpersonal Circumplex

others, whereas hostile behavior invites hostility in return. Further, dominant IP behavior “pulls” for submissive behavior from others, whereas submissiveness invites dominance. The reciprocal nature of IP behavior further suggests that complementarity can continue over time. When a hostile individual elicits hostile behavior from another person, it is likely that the hostile interaction will continue. These patterns are known as transactional cycles (see Figure 2) and they include both covert and overt responses. Complementarity occurs in a number of settings, including physician-patient interactions (Kiesler & Auerbach, 2003; Wagner, Kiesler, & Schmidt, 1995). Further, IPC-based measures have been developed to assess specific overt and covert elements within these transactional cycles, including IP goals and values (Locke, 2000).

INDIVIDUAL



SOCIAL ENVIRONMENT

Figure 2. The Transactional Cycle

This perspective also stresses the importance of IP problems and their role in maintaining maladaptive IP styles (Tracey, 2005). In this view, hypochondriacal individuals respond to insecurity by focusing on somatic concerns, and utilize related complaints in attempts to maintain connections to others. IP models emphasize different illness behaviors compared to CB models. For example, CB models focus on illness behaviors such as avoidance, reassurance seeking, and checking behaviors, while IP models focus on illness behaviors in which the hypochondriacal individual is trying to convince others that he or she is really sick.

There is growing empirical support for IP conceptualizations of hypochondriasis. Insecure attachment is more prevalent in hypochondriacal individuals compared to nonhealth anxious individuals (Noyes, et al., 2002). Though the IP style of people with hypochondriasis has not been directly examined, research has shown that insecurely attached people have IP styles marked by unfriendly submissiveness (Gallo, Smith, & Ruiz, 2003). In regards to IP problems, health anxious individuals report more IP distress, more dissatisfaction with their healthcare, and frustrating interactions with their physicians (Hollifield, Paine, Tuttle, & Kellner, 1999). IP psychotherapy shows promise for helping hypochondriacal individuals to express their needs directly by being assertive (Stuart & Noyes, 2006).

In a study of patients seeking health care, Noyes and colleagues (2003) administered questionnaires to assess the patients' adult attachment styles, health anxiety, levels of somatic symptoms, personality, IP difficulties, and satisfaction with healthcare. Hypochondriacal tendencies and somatic symptoms were assessed by the WI and Somatic Symptom Inventory (Barsky, Cleary, Wyshak, & Spitzer, 1992). Unfortunately,

it is unclear what they were measuring because they did not consider the multidimensional nature of hypochondriasis. Hypochondriacal tendencies were associated with insecure attachment (e.g., fearful attachment style) and higher levels of reported IP problems, including the tendency to perceive others as undependable, inconsistent, and/or neglectful. The authors concluded that hypochondriasis can be seen as a chronic IP dysfunction based in insecure attachment. While their model emphasized attachment, their study also found that hypochondriacal individuals felt more dissatisfied with their healthcare, reporting more problems with their physicians. However, their analysis of IP problems associated with hypochondriasis was limited by the fact that they did not adjust scores for the general tendency to report emotional and social difficulties, and hence it is difficult to identify the specific type of IP problem most closely associated with hypochondriasis. Additionally, they did not assess the IP styles of hypochondriacal individuals to see whether there are distinct ways that hypochondriacal individuals tend to act towards others.

The Present Study

The present study will extend prior research on the interpersonal perspective, and use it to clarify the similarities and differences among the components of hypochondriasis. First, I attempt to replicate the findings of Noyes and colleagues (2003) on the relationship between insecure adult attachment styles and hypochondriacal traits, and extend their results on attachment style by using a different measure of adult attachment and measures of multiple hypochondriacal traits that more clearly assess the construct. Second, I take the next logical step in the initial IP analysis offered by Noyes and colleagues (2003) by examining the IP processes associated with hypochondriacal

traits. Specifically, I evaluate the IP style associated with multiple measures of hypochondriacal traits by examining their associations with the affiliation and control dimensions of a well-established measure of the IPC. Differing types of associations will be assessed for the various subscales of these measures of hypochondriacal traits such as “health anxiety” and “disease conviction” because research on other multidimensional variables, such as dependency, have diverse IP components (Gurtman, 1992).

Third, I attempt to evaluate transactional mechanisms associated with the IP style(s) by examining IP goals and values associated with various components of hypochondriasis. Fourth, I attempt to replicate and extend the findings of Noyes et al. (2003) on IP difficulties associated with hypochondriasis by a) correcting potential limitations in their analyses of IP problems and, b) testing associations between hypochondriacal traits and levels of social support, loneliness, and aversive IP experiences. Complementarity and transactional cycles have important implications for health anxiety and hypochondriacal traits (P. G. Williams, et al., in press). For example, if the IP style associated with these traits is characterized by low warmth, health anxiety and hypochondriasis should be associated with lower levels of social support and higher levels of IP conflict, which will maintain the dysfunctional IP style and the associated somatic complaints. Fifth, given that neuroticism is correlated with health anxiety, I examine its association with the components of hypochondriacal traits. I analyze whether other variables in addition to neuroticism help predict hypochondriacal tendencies.

I predicted that measures of health anxiety and other hypochondriacal traits would be associated with insecure attachment, different IP styles, higher neuroticism, lower levels of social support, and higher levels of loneliness and aversive IP experiences.

Specifically, for the different IP styles associated with hypochondriacal tendencies I predicted that the conviction/cognitive component of hypochondriacal tendencies would be associated with a hostile-submissive IP style because this component involves attempts to convince others that one really has a disease. I also hypothesized that the perceptual and affective components would be related to a hostile-submissive style. However, in regard to the behavioral component I predicted that it would be associated with the warm and friendly axis of the IPC because the items that make up the behavioral component reflect a tendency to seek out social support when one is sick. It is likely that wanting to be reassured and seeking out social support to get this reassurance is associated with a friendly interpersonal style. No prediction was ventured for where the behavioral component would fall on the dominant versus submissive axis of the IPC. In multivariate analyses, I predicted that neuroticism would be a significant predictor of hypochondriacal tendencies, but that attachment insecurity would add incremental validity to my prediction.

METHOD

Participants

A total of 122 undergraduates (77 females) participated in the study, receiving partial course credit. Their mean age was 21.22 ($SD=3.88$) with a range between 17 and 40 years. Sixty-four percent were Caucasian, 20% were Asian/Pacific Islander, 4% were Latino, 4% were multiracial, 3% were African American, and the remaining 5% were of other ethnicity. In our sample, 20 individuals met or exceeded a previously established cutoff score for identifying hypochondriacal individuals (Gerdes, et al., 1996; Noyes, Kathol, Fisher, & Phillips, 1993).

Procedure

Participants signed up for this study through the research subject pool. The questionnaires were administered via computer in small groups using a web-based survey program. Informed consent was acquired followed by instructions in filling out the following questionnaires.

Measures

Participants reported their age, ethnicity, sex, socioeconomic status, and religious orientation. Their general health status ("In general, how would you rate your physical health") and experience with chronic illness ("Are you currently being treated for a chronic illness," and "Have you been treated for a chronic illness in the past") were

assessed. Healthcare utilization (“How often do you go to a primary care physician, hospital, nurse, and/or other health care practitioner”) and health insurance status (“Do you have health insurance”) were reported.

The Interpersonal Adjective Scales—Big Five (IASR-B5) includes a circumplex measure of IP traits (affiliation and control), as well as factor scores for neuroticism, openness to experience, and conscientiousness (Wiggins, Trobst, de Raad, & Perugini, 2002). Octant scores representing the IP traits (i.e., Dominant, Friendly-Dominant, Friendly, Friendly-Submissive, Submissive, Hostile-Submissive, Hostile, and Hostile-Dominant) are derived from 64 adjectives. Neuroticism, openness to experience, and conscientiousness are derived from the remaining 60 adjectives. Participants are told to rate themselves on these adjectives on a scale from 1 (“Extremely inaccurate”) to 8 (“Extremely accurate”). These scales have demonstrated high levels of internal consistency, expected circumplex structure, and construct validity (Kiesler, 1991; Trapnell & Wiggins, 1990; Wiggins & Broughton, 1991; Wiggins, Trapnell, & Phillips, 1988).

The Inventory of Interpersonal Problems—Short Circumplex Form (IIP-SC) is a condensed version of the Inventory of Interpersonal Problems—Circumplex scales (IIP-C). The IIP-C includes 64 items consisting of 8 items measuring difficulties corresponding to the 8 octants of the IPC (Alden, Wiggins, & Pincus, 1990). Soldz and colleagues (1995) constructed a 32-item version of this circumplex measure by selecting 4 items from each octant that had the highest correlation with the whole scale. The internal consistency reliability for the resulting 8 octants ranged from .68 to .84, and the test-retest stability over 4 months ranged from .66 to .83 in their samples. Participants are

instructed to consider potential problems they may face in life (“I am too easily persuaded by others”) and rate how distressing those problems are on a scale ranging from 1 (“Not at all”) to 5 (“Extremely”).

The Circumplex Scales of Interpersonal Values (CSIV) assesses communal and agentic values or goals corresponding to the IPC (Locke, 2000). Participants are told to rate how important it is for them to act or appear or be treated a certain way when around others (“When I am with him/her/them, it is... 0 1 2 3 4 ...that I appear forceful”), where the answer choices range from 0 (“not important to me”) to 4 (“extremely important to me”). The CSIV includes eight scales that conform to a circumplex structure. The CSIV shows convergent and discriminant validity with other IP motives, behaviors, roles, and problems, and the eight scales demonstrate good reliability with alphas ranging from .76 to .86 (Locke, 2000).

The Revised UCLA Loneliness Scale (Russell et al., 1980) assesses individual differences in the subjective experience of loneliness. Participants are asked to indicate how often they feel the way described in each statement (“I am no longer close to anyone”) on a scale ranging from 1 (“Never”) to 4 (“Often”). It demonstrates high internal consistency ($\alpha = .94$) as well as convergent and discriminant validity (Russell, Peplau, & Cutrona, 1980), and it is unidimensional (Hartshorne, 1993).

The Test of Negative Social Exchanges (TENSE) measures exposure to social conflict (Ruehlman & Karoly, 1991). It has four subscales: Insensitivity, Hostility/Impatience, Interference, and Ridicule. Participants are told to rate how often in the past month people have engaged in certain IP behaviors with them (“Lost their temper with me”) on a scale ranging from 1 (“Not at all”) to 5 (“About every day”). The TENSE

has acceptable internal consistency and construct validity (Gallo, et al., 2003).

The Interpersonal Support Evaluation List—12 (ISEL-12) is a shortened version of the original 48-item version (Cohen & Hoberman, 1983). Likert-scale items assess support on three subscales: Appraisal Support, Belonging Support, and Tangible Support (Frank-Stromborg & Olsen, 2004). Internal consistency ranges from .80 to .90 (Cohen, 2008).

The Experiences in Close Relationships—Revised (ECR-R) is a measure of adult attachment styles. It has two dimensions, anxiety and avoidance (Fraley, Waller, & Brennan, 2000), and has good internal consistency and construct validity (Brennan, Clark, & Shaver, 1998). Participants are asked how they generally experience relationships (“I often worry that my partner will not stay with me”), and the answer choices range from 1 (“Strongly disagree”) to 7 (“Strongly agree”).

The Whitely Index (WI) assesses hypochondriasis (Pilowsky, 1967), and includes three subscales: bodily preoccupation (e.g., “Are you bothered by many aches and pains?”), disease phobia (e.g., “Do you worry a lot about your health?”), and disease conviction (e.g., “Do you get the feeling that people are not taking your illness seriously enough?”). However, some research has found a one-factor solution (Speckens, Spinhoven, Sloekers, & Bolk, 1996). The scoring procedure for the WI was based on Pilowsky’s original three dimensional model (Pilowsky, 1967) as well as the factor analysis of Hiller and colleagues (2002). These subscales relate to several of the theorized components of hypochondriasis offered by Starcevic (2001). The “bodily preoccupation” subscale represents the bodily symptoms and bodily preoccupation components of hypochondriasis. The “disease phobia” subscale corresponds to the illness worry

component of hypochondriasis in which there is a fearful concern that a disease is (or might be) present. The “disease conviction” subscale relates to the disease suspicion and resistance to reassurance components of hypochondriasis. The WI does not assess many hypochondriacal behaviors such as bodily checking or avoidance of illness-related stimuli, and this oversight limits the construct validity of the instrument. The internal consistency for the total WI ranges from .76 to .80, and it has good test-retest reliability ($r = .90$) over a period of 42 weeks (1996). Participants are asked to rate how much they engage in health thoughts or behaviors on a scale ranging from 1 (“Not at all”) to 5 (“A great deal”).

The Multidimensional Inventory of Hypochondriacal Traits (MIHT) is a newer measure of hypochondriasis that includes four factors: Hypochondriacal alienation, hypochondriacal reassurance, hypochondriacal absorption, and hypochondriacal worry (Longley, et al., 2005). These factors assess the cognitive (e.g., “People seem unconvinced my symptoms are signs of illness”), behavioral (e.g., “I turn to others for support when I do not feel well”), perceptual (“I am aware of physical sensation”), and affective (e.g., “When I experience pain, I fear I may be ill”) components of hypochondriasis, respectively. In the present study, the scoring procedure for the MIHT was based on the four dimensional model of Longley and colleagues (2005). The MIHT relates to many of the components of hypochondriasis theorized by Starcevic (2001). The difference between the cognitive and behavioral components of the MIHT is unique among the instruments that assess the hypochondriacal domain because it addresses differing degrees to which individuals respond to reassurance. The behavioral component of the MIHT assesses hypochondriacal behaviors where the individual seeks out

reassurance to quell illness worry. The cognitive component, however, relates to disease suspicion and it captures the interpersonally noxious part of hypochondriasis in which the individual is frustrated that others are not taking his or her health problems seriously. The cognitive component of the MIHT does not address thought processes such as catastrophic thinking. In fact, overall the MIHT overlooks this aspect of the construct. The perceptual component of the MIHT corresponds to the bodily preoccupation aspect of the hypochondriacal construct, and the affective component of the MIHT corresponds to the fearful concern that a disease might be present. Additionally, the affective component also assesses hypochondriacal behaviors (e.g., “I try to avoid things that make me think of illness or death”). The internal consistency of the factor scales is high ranging from .80 to .89. Participants are asked to consider statements related to their health and rate how much they describe or relate to them on a scale ranging from 1 (“Definitely false”) to 5 (“Definitely true”).

Statistical Analyses

Regression analyses were conducted in order to determine the IP style associated with WI and MIHT total scores, as well as their subscales. Specifically, scores from the WI and MIHT were regressed on affiliation and control scores from the circumplex measures. The multiple R in this analysis indicates the extent to which a given scale is “interpersonal” in nature, and the regression coefficients for affiliation and control indicate the specific IP style (Gurtman, 1991). Correlational analyses tested the hypotheses regarding the associations of hypochondriacal traits with attachment styles, loneliness, negative social exchanges, and social support.

RESULTS

The mean for the WI total was 28.24 ($SD=9.32$) and the mean for the MIHT total was 96.43 ($SD=13.38$). The internal consistencies (Cronbach's alpha) were .88 and .83, respectively. The means, standard deviations, and internal consistencies for the WI and MIHT subscales are reported in Table 1. The correlation matrix among the three subscales of the WI and the four subscales of the MIHT (see Table 1) shows that the three dimensions of the WI are highly correlated, whereas the four dimensions of the MIHT display a markedly different correlational pattern. The perceptual subscale of the MIHT is not related to any of the other subscales of the MIHT or WI. The behavioral subscale of the MIHT also shows low correlations with the other subscales. Similar factor correlations were found by Longley, et al. (2005).

The WI total was correlated with worse self-reported health and a higher number of healthcare visits (see Table 2). The WI phobia and somatic subscales displayed a similar correlational pattern, but the conviction subscale of the WI failed to reach significance. The MIHT total was unrelated to self-reported health and healthcare utilization. The MIHT affective subscale, however, did display a significant correlation with the number of self-reported healthcare visits ($r = .25, p < .01$).

Table 1. *Descriptive Statistics, Coefficient Alphas, and Correlation Matrix for the WI and MIHT*

	M	SD	WI phobia	WI somatic	WI conv	MIHT behav	MIHT cognitive	MIHT percep	MIHT affect
WI phobia	12.82	5.32	(.75)						
WI somatic	5.6	2.48	.66**	(.53)					
WI conv	6.79	2.56	.57**	.52**	(.70)				
MIHT behavioral	26.37	5.43	.11	.08	.21*	(.77)			
MIHT cognitive	16.34	5.05	.40**	.30**	.45**	.09	(.82)		
MIHT perceptual	34.71	5.61	.10	.07	.11	.08	.03	(.81)	
MIHT affective	19.01	5.65	.73**	.52**	.48**	.28**	.44**	.10	(.80)

Note. WI=Whiteley Index, MIHT=Multidimensional Inventory of Hypochondriacal Traits, and conv=conviction. Based on the factor analysis by Hiller et al. (2002) and suggested scoring procedures, one item of the WI did not load onto any of the WI subscales; therefore, it only counted for the WI total score. The subscales of the WI and MIHT all correlate with their respective scale at levels ranging from .507 to .929. $N=119$
 * $p < .05$; ** $p < .01$

Table 2. *WI and Subscales Correlated with Self-rated Health and Utilization*

	Self-rated health	Healthcare utilization
WI total	-.26**	.30**
WI phobia	-.27**	.29**
WI somatic	-.28**	.33**
WI conviction	-.11	.16

Note. $N = 119$.

** $p < .01$

Analyses of Interpersonal Style

Results for regressions of the hypochondriasis scales on the IPC dimensions of affiliation and control are presented in Table 3 and depicted in Figures 3 and 4. Distinct IP styles emerged as can be seen in Figures 3 and 4. The conviction subscale of the WI and the cognitive subscale of the MIHT displayed the expected IP style, located in the hostile-submissive quadrant of the IPC. The behavioral subscale of the MIHT, on the other hand, was significantly associated with the friendly/warm pole of the IPC. The other subscales and total scores were not significantly related to the IPC (see Table 3).

Associations with Attachment Style

Given that the conviction subscale of the WI and the cognitive subscale of the MIHT fell into the hypothesized quadrant of the IPC, the rest of my analyses focused on these subscales, as well as the total WI and MIHT scales. To examine the attachment style of individuals reporting hypochondriacal tendencies, I individually regressed the WI total, conviction subscale, MIHT total, and cognitive subscale on the anxiety and avoidance dimensions as calculated from the ECR-R. Based on the findings of Noyes and colleagues (2003), I had predicted that hypochondriacal traits would be correlated with anxious attachment and this prediction was confirmed. As can be seen in Table 4, the total scores of the WI and MIHT were significantly related to the anxiety dimension of the ECR-R, as were the conviction and cognitive subscales. In addition to being related to the anxiety dimension of the ECR-R, the conviction subscale of the WI was also related to the avoidance dimension of the ECR-R. As for the other subscales, the MIHT behavioral and perceptual subscales were unrelated to the dimensions of the ECR-R. The MIHT affective subscale was positively related to the anxiety dimension of the ECR-R,

Table 3. *Regression Results of WI, MIHT, and Subscales on Dominance and Affiliation*

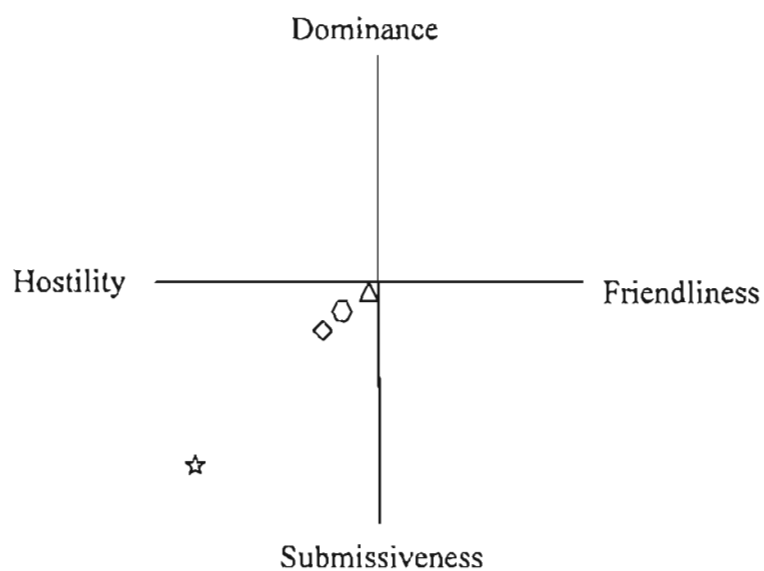
Variable	Multiple R	F (df)	<i>P</i>	Parameter Estimate	<i>t</i> (df)	<i>p</i>
WI total	.12	.857 (2,116)	.43	Dom. = -.06 Aff. = -.11	-.653 (117) -1.207 (117)	.515 .230
WI phobia	.06	.223 (2,116)	.80	Dom. = -.01 Aff. = -.06	-.061 (117) -.668 (117)	.951 .505
WI somatic	.08	.393 (2,116)	.68	Dom. = -.04 Aff. = -.08	-.426 (117) -.824 (117)	.671 .412
WI conviction	.29	5.379 (2,116)	.01	Dom. = -.20 Aff. = -.24	-2.218 (117) -2.671 (117)	.029 .009
MIHT total	.08	.377 (2,119)	.69	Dom. = .01 Aff. = .08	.153 (120) .866 (120)	.878 .388
MIHT behavioral	.28	5.031 (2,119)	.01	Dom. = -.004 Aff. = .28	-.044 (120) 3.143 (120)	.965 .002
MIHT cognitive	.26	4.150 (2,119)	.02	Dom. = -.13 Aff. = -.24	-1.431 (120) -2.654 (120)	.155 .009
MIHT perceptual	.21	2.633 (2,119)	.08	Dom. = .18 Aff. = .12	2.033 (120) 1.300 (120)	.044 .196
MIHT affective	.04	.080 (2,119)	.92	Dom. = -.03 Aff. = .02	-.338 (120) .174 (120)	.736 .862

Note: Each variable was regressed on dominance and affiliation one at a time.

$r = .37, p < .01$, as were the WI phobia, $r = .38, p < .01$, and WI somatic, $r = .33, p < .01$, subscales. Thus, hypochondriacal individuals reported an anxious attachment, and based on the conviction subscale of the WI, the finding suggested a fearful attachment style.

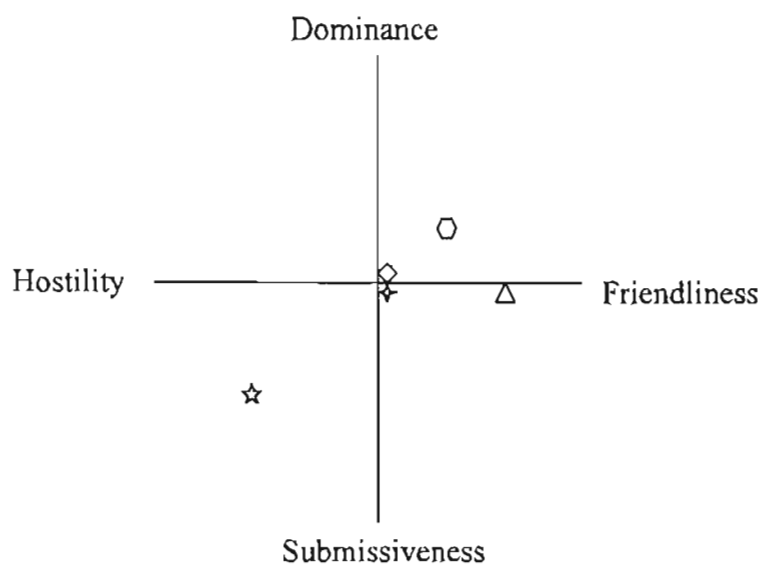
Interpersonal Goals and Values

The IP analysis of these measures of hypochondriacal tendencies was extended by assessing their relationship with IP goals and values. Octant scores were calculated for the circumplex measures of IP goals and values based on Locke's (2000) recommended scoring. Correlational analyses for the WI and MIHT total scales indicated that hypochondriacal tendencies were associated with several different goals (see Table 5). While individuals with hypochondriacal traits have many different goals, the magnitude



Note: \diamond = WI total; \triangle = WI phobia; \square = WI somatic; \star = WI conviction
 Radius is Multiple $R = .4$

Figure 3. WI and WI Subscales in Interpersonal Circumplex Space



Note: \diamond = MIHT total; \triangle = MIHT beh.; \star = MIHT cog.; \square = MIHT perc.; $+$ = MIHT aff.
 Radius is Multiple $R = .4$

Figure 4. MIHT and MIHT Subscales in Interpersonal Circumplex Space

Table 4. *Correlation Among WI, MIHT, and ECR-R*

	ECR anxiety	ECR avoidance
WI total	.40**	.15
WI conviction	.33**	.18*
MIHT total	.40**	.06
MIHT cognitive	.30**	.17

Note: $N=119$ * $p < .05$, ** $p < .01$ Table 5. *Correlations Among CSIV Octants and Measures of Hypochondriacal Traits*

Octants	CSIV	
	WI total	MIHT total
PA	.17	.23*
BC	.31**	.20*
DE	.32**	.14
FG	.35**	.25**
HI	.35**	.30**
JK	.25**	.29**
LM	.19*	.35**
NO	.19*	.32**

Note: * $p < .05$, ** $p < .01$

of these associations suggests that they particularly value avoiding ridicule, submitting to others, and putting others' needs first in order to gain acceptance. It should be noted, however, that when these octant scores are ipsatized, all of these significant relationships disappear. Ipsatizing can remove a general factor underlying a measure (Tracey, Rounds, & Gurtman, 1996).

The WI conviction and MIHT cognitive subscales did have significant relationships with the CSIV after ipsatization of the octant scores. The WI conviction

subscale was correlated with hostile-submissive goals such as a desire to avoid ridicule from others and possible rejection ($r = .24, p < .01$), a lower desire to express oneself openly ($r = -.22, p < .05$), and a lower desire to experience a genuine connection with others ($r = -.19, p < .05$). The MIHT cognitive subscale was correlated with hostile goals such as the desire to maintain a guarded IP stance ($r = .22, p < .05$), a lower desire to express oneself openly ($r = -.27, p < .01$), and a lower desire to experience a genuine connection with others ($r = -.18, p < .05$).

Interpersonal Problems and Difficulties

Replicating the findings of Noyes and colleagues (2003), the anxiety and avoidance dimensions of the ECR-R were related to interpersonal problems (IIP), especially the anxiety dimension. For individuals with higher scores on the anxiety dimension (suggesting an insecure, anxious attachment), the strongest correlations were with problems related to intrusiveness ($r = .44, p < .01$), vindictiveness ($r = .42, p < .01$), and being overly accommodating ($r = .42, p < .01$). For individuals with higher scores on the avoidance dimension (suggesting an insecure, avoidant attachment), the strongest correlations were with problems related to being too cold/distant ($r = .52, p < .01$) and vindictiveness ($r = .35, p < .01$). When the IIP octants were ipsatized, the only significant correlations remaining were between the anxiety dimension and the domineering octant ($r = -.25, p < .01$) and the avoidance dimension and the cold/distant octant ($r = .44, p < .01$). Thus, attachment styles might have specific interpersonal problems (IIPs) associated with them over and above generalized IIPs. People with insecure, anxious attachment styles do not report problems related to being too domineering of others, and people with insecure, avoidant attachment styles report problems related to being too cold and distant

from others.

Measures of hypochondriacal tendencies, especially the WI, were correlated with many types of IIPs (see Table 6), consistent with findings by Noyes and colleagues (2003). When ipsatized, the remaining significant correlations were between the WI conviction subscale and the vindictive octant ($r = .181, p = .050$), MIHT total and the cold/distant octant ($r = -.189, p < .05$), MIHT behavioral and cold/distant octant ($r = -.235, p < .05$) and intrusive octant ($r = .202, p < .05$), MIHT cognitive and vindictive octant ($r = .183, p < .05$) and overly nurturant octant ($r = -.213, p < .05$), and MIHT perceptual and domineering octant ($r = .224, p < .05$), socially avoidant octant ($r = -.281, p < .01$), and overly nurturant octant ($r = .235, p < .05$) of the IIP-SC. Thus, hypochondriacal individuals had many IP complaints, but once this “general” complaint factor was removed via ipsatization, individuals who were convinced that they had a feared disease specifically experienced IIPs where they had a difficult time feeling happy for others or supporting them, and they tended to not consider others’ needs before their

Table 6. *Correlation Among WI Total, MIHT Total, and Subscales with IIP-SC*

	IIP-PA	IIP-BC	IIP-DE	IIP-FG	IIP-HI	IIP-JK	IIP-LM	IIP-NO
Wit	.31**	.42**	.33**	.28**	.26**	.30**	.39**	.35**
Wlp	.28**	.37**	.28**	.21*	.21*	.32**	.36**	.34**
Wls	.22*	.30**	.27**	.25**	.20*	.19*	.35**	.36**
Wlc	.31**	.53**	.39**	.39**	.28**	.27**	.30**	.27**
MIHTt	.23*	.24*	.03	.09	.18*	.16	.21*	.33**
MIHTb	-.01	-.01	-.11	.08	.12	.09	.13	.23*
MIHTc	.18	.39**	.21*	.22*	.24**	.21*	.04	.32**
MIHTp	.19*	-.06	-.11	-.21*	-.02	-.08	.15	.01
MIHTa	.20*	.28**	.09	.15	.13	.18*	.21*	.27**

Note: Witot = Whiteley total, Wlp = Whiteley phobia, Wls = Whiteley somatic, and Wlc = Whiteley conviction. MIHTt = MIHT total, MIHTb = MIHT behavioral, MIHTc = MIHT cognitive, MIHTp = MIHT perceptual, and MIHTa = MIHT affective.

$N = 119$ * $p < .05$; ** $p < .01$

own. Individuals who frequently sought reassurance, on the other hand, tended to have IIPs marked by intruding upon others too much (e.g., telling others too much about “personal” things that might best be kept private).

It was expected that hypochondriacal tendencies would be associated with decreased social support, increased loneliness, and increased interpersonal stress and this hypothesis was confirmed. Table 7 shows that the WI totals and subscales were significantly correlated with these IP correlates. With the exception of the cognitive subscale of the MIHT, the MIHT total and subscales displayed a weaker pattern of correlations with these IP correlates. The behavioral subscale of the MIHT, in fact, was not correlated with any of these IP difficulties.

Table 7. *Correlation Among WI total, MIHT Total, and Subscales with Interpersonal Variables*

	Interpersonal support	Interpersonal stress	Loneliness
WI total	-.31**	.39**	.31**
WI phobia	-.25**	.38**	.20*
WI somatic	-.22*	.35**	.27**
WI conviction	-.40**	.25**	.46**
MIHT total	-.12	.39**	.18
MIHT behavioral	.07	.13	.07
MIHT cognitive	-.32**	.27**	.33**
MIHT perceptual	.15	.21*	-.11
MIHT affective	-.21*	.36**	.17

Note: $N = 119$

* $p < .05$; ** $p < .01$

Hypochondriacal Traits, Attachment, and the Effects of Neuroticism

Given that both attachment styles (Gallo et al., 2003) and hypochondriacal traits (Cox, Borger, Asmundson, & Taylor, 2000) are associated with neuroticism, it was important to determine if the association between attachment styles and hypochondriacal traits could be accounted for by this overlap. In the present sample, neuroticism was consistently associated with hypochondriacal tendencies (see Table 8). Neuroticism was entered into the regression analyses along with age, gender, ethnicity, and the anxiety and avoidance dimensions of the ECR-R. Tables 9 and 10 present these results. Age predicted hypochondriacal traits as assessed by the WI and MIHT total scales, with older individuals reporting fewer hypochondriacal tendencies. Importantly, the anxiety dimension of the ECR-R maintained its association with hypochondriacal traits when neuroticism was controlled. Similar results were found for the conviction subscale of the WI and for the cognitive subscale of the MIHT (see Tables 11 and 12). Interestingly, the behavioral subscale of the MIHT had distinct predictors compared with the other scales. Table 13 shows that the MIHT behavioral subscale was significantly predicted by gender, neuroticism, and the anxiety and avoidance dimensions of the ECR-R. This result suggests that people who tend to seek social support from others when concerned about their health are more likely to be female and have a preoccupied attachment style (e.g., a positive correlation with the anxiety dimension and a negative correlation with the avoidance dimension of the ECR-R).

Table 8. *Correlation Among WI Total, MIHT Total, and Subscales with Neuroticism*

	Neuroticism
WI total	.42**
WI phobia	.31**
WI somatic	.34**
WI conviction	.32**
MIHT total	.12
MIHT behavioral	.30**
MIHT cognitive	.13
MIHT perceptual	.04
MIHT affective	.36**

Note: $N=119$ * $p < .05$, ** $p < .01$ Table 9. *Multiple Regression of WI on Demographic Variables, Neuroticism, and Attachment*

Predictors (step)	R	R-squared change	F change	Significant F change	Parameter Estimate	t	p
(1) Age	.250	.063	7.752	.006	-.223	-2.70	.008
(2) Sex	.250	.000	.013	.910	.005	.05	.958
(3) Ethnicity	.252	.001	.099	.754	-.025	-.30	.766
(4) Neuroticism	.416	.109	14.943	.000	.200	2.12	.037
(5) ECR-anx	.495	.072	10.683	.001	.331	3.10	.002
(6) ECR-avd	.497	.002	.325	.569	-.056	-.57	.569

Note: $N=119$

Table 10. *Multiple Regression of MIHT on Demographic Variables, Neuroticism, and Attachment*

Predictors (step)	R	R-squared change	F change	Significant F change	Parameter Estimate	T	p
(1) Age	.240	.058	7.282	.008	-.217	-2.70	.008
(2) Sex	.255	.008	.956	.330	-.058	-.70	.487
(3) Ethnicity	.264	.004	.552	.459	.056	.68	.496
(4)Neuroticism	.412	.100	13.944	.000	.164	1.79	.076
(5) ECR-anx	.500	.080	12.336	.001	.409	3.94	.000
(6) ECR-avd	.519	.020	3.046	.084	-.166	-1.75	.084

Note: N=119

Table 11. *Multiple Regression of WI Conviction Subscale on Demographic Variables, Neuroticism, and Attachment*

Predictors (step)	R	R-squared change	F change	Significant F change	Parameter Estimate	T	p
(1) Age	.210	.044	5.36	.022	-.192	-2.24	.027
(2) Sex	.240	.014	1.66	.200	-.123	-1.37	.173
(3) Ethnicity	.253	.006	.75	.388	-.070	-.81	.423
(4)Neuroticism	.370	.073	9.54	.003	.165	1.69	.093
(5) ECR-anx	.438	.055	7.63	.007	.235	2.13	.036
(6) ECR-avd	.440	.002	.24	.623	.050	.49	.623

Note: N=119

Table 12. *Multiple Regression of MIHT Cognitive Subscale on Demographic Variables, Neuroticism, and Attachment*

Predictors (step)	R	R-squared change	F change	Significant F change	Parameter Estimate	T	p
(1) Age	.216	.047	5.82	.017	-.202	-2.31	.023
(2) Sex	.246	.014	1.72	.192	.094	1.03	.304
(3) Ethnicity	.247	.001	.07	.791	-.037	-.42	.676
(4)Neuroticism	.281	.018	2.27	.135	.015	.15	.884
(5) ECR-anx	.373	.060	8.05	.005	.275	2.44	.016
(6) ECR-avd	.373	.000	.000	.992	-.001	-.01	.992

Note: N=119

Table 13. *Multiple Regression of MIHT Behavioral Subscale on Demographic Variables, Neuroticism, and Attachment*

Predictors (step)	R	R-squared change	F change	Significant F change	Parameter Estimate	T	p
(1) Age	.141	.020	2.426	.122	-.132	-1.65	.102
(2) Sex	.402	.142	19.914	.000	-.313	-3.76	.000
(3) Ethnicity	.418	.014	1.916	.169	.116	1.43	.155
(4)Neuroticism	.486	.061	9.246	.003	.185	2.03	.044
(5) ECR-anx	.493	.008	1.144	.287	.225	2.19	.031
(6) ECR-avd	.530	.038	5.998	.016	-.231	-2.45	.016

Note: N=119

DISCUSSION

Overall, these results suggest that hypochondriacal tendencies are associated with anxious attachment and distinct IP styles and consequences. The findings regarding attachment style extend those of Noyes and colleagues (2003) by using a different and psychometrically sound measure of adult attachment style (the ECR-R), as well as a second measure of hypochondriacal traits (the MIHT). Most of the measures of hypochondriacal tendencies were associated only with the anxiety dimension of adult attachment, suggesting that people with hypochondriacal traits do not think positively about themselves and their social world, but that they do not have a clear tendency to either approach or avoid others.

However, when examining the WI and MIHT subscales, individual aspects of the hypochondriacal domain had more specific associations with attachment style. The WI conviction subscale was positively associated with both the anxiety and avoidance dimensions, and the MIHT behavioral subscale was positively associated with the anxiety dimension and negatively associated with the avoidance dimension. These findings suggest that people who are convinced that they have a disease may have a fearful attachment style in which they see themselves and others in a negative light. This is consistent with the scale content, which includes items such as "Is it hard for you to believe the doctor when he/she tells you there is nothing for you to worry about?" A person who views him or herself negatively and others as unreliable, is less likely to trust

an authority figure offering reassurance. The behavioral subscale of the MIHT, on the other hand, reveals a different pattern. Individuals with high scores on this aspect of hypochondriasis report the tendency to seek social support to alleviate their concerns about their health. They also tend to have a preoccupied attachment style in which they see themselves in a negative fashion but see others as reliable and trustworthy. To address their health concerns, it may be important for such individuals to approach others to elicit sympathy. This pattern corresponds to their IP style, which falls toward the friendly pole of the IPC, as well as a lack of significant correlations to IP correlates such as loneliness.

The WI and MIHT total hypochondriasis scales did not have a distinct IP style with respect to IPC affiliation and control. However, specific subscales did. Both the WI conviction and MIHT cognitive subscales were associated with a hostile-submissive IP style. This aspect of hypochondriacal tendencies—experiencing others as not understanding that one is actually sick—has the expected IP style. Individuals scoring high on these specific hypochondriacal tendencies feel alienated and misunderstood, and this is manifested in their IP interactions as they tend to be distant, unsociable, unfriendly, and submissive. Given this sense of alienation, their goals to avoid ridicule from others and keep up a guarded IP stance are understandable; however, this style may serve to maintain maladaptive IP transactions over time.

The behavioral subscale of the MIHT, however, was associated with a very different IP style and corresponding interpersonal processes. People scoring high on this subscale described themselves as charitable, kind, and softhearted. The authors of the MIHT argue that the behavioral subscale measures hypochondriacal dependency

(Longley, et al., 2005), and it appears that this aspect of hypochondriacal tendencies is associated with warm and friendly tendencies in social interaction, perhaps reflecting the goal to maintain a connection with others in order to gain reassurance.

In analyses of IIPs, aside from the MIHT behavioral subscale, hypochondriacal tendencies were associated with many IIPs. However, after ipsatization most of these associations were not significant, suggesting that hypochondriacal individuals tend to report IP difficulties generally and experience general distress in social relations, as opposed to a primary type of IIP. However, a few associations remained after ipsatization for the WI conviction and MIHT cognitive subscales, which may indicate specific IIPs for individuals who experience hypochondriacal alienation. These problems include suspiciousness, resentfulness, and vindictiveness. Furthermore, compared to others who are not convinced that they have a disease, they are less likely to have problems attending to their own welfare or trying to please other people too much. Given the distinct IP style and associated IIPs of individuals with this hypochondriacal characteristic, it is not surprising that they also report less social support, and more loneliness and IP stress.

The current study used a newer measure of hypochondriacal tendencies, the MIHT, and my findings suggest that there are diverse components within this measure with different IP manifestations and correlates. To a lesser extent, I also found that the WI had diverse components as well. Some of the components (e.g., disease phobia and hypochondriacal worry) look like classic health anxiety, which was not associated with a particular IP style or particular type of IIP. However, these aspects of health anxiety were associated with anxious attachment, low levels of social support, and high levels of loneliness and IP conflict. In contrast, the cognitive/conviction components of

hypochondriacal tendencies were associated with a distinct IP style and particular IIPs. Being convinced that one has an illness and feeling misunderstood because others do not recognize this is associated with a hostile-submissive IP style and problems related to not being kind towards others. Importantly, these latter aspects of hypochondriasis were also associated with anxious attachment, low social support, and higher levels of loneliness and IP conflict.

Limitations and Qualifications

The limitations of this study include the following: a) the sample consisted of college undergraduates so the results may not be generalizable to patient samples, older adults, or children; b) all of the measures were self-report; and c) the cross-sectional design and correlational analyses prevent us from ascertaining cause (e.g., do hypochondriacal tendencies lead to an IP style or does an IP style make you susceptible to hypochondriacal tendencies?).

Conclusions and Future Directions

These results provide support for the IP perspective on health anxiety and hypochondriasis proposed by Noyes and colleagues (2003), as well as some refinements and extensions. First, the WI and MIHT total scores were associated with anxious attachment, as expected, as were the individual components of hypochondriasis. These total scales and all but one of the subscales (i.e., MIHT behavioral subscale) were also consistently associated with the general tendency to report IIPs, as well as low social support, loneliness, and IP conflict. Yet, only the measures of hypochondriacal alienation (i.e., WI conviction subscale and MIHT cognitive subscale) were also associated with a

specific hostile-submissive IP style, and related IIPs and goals involving ridicule and self-protection. Hence, this suggests that the IP model might be refined. Specifically, whereas most aspects of hypochondriasis, including the experience of health anxiety, are associated with anxious attachment and general IP difficulties, the component of hypochondriasis reflecting the experience of others as failing to understand the gravity of one's health concerns is unique in its association with a hostile-submissive IP style and related IIPs and concerns. These problems and concerns involve hostile and vindictive interactions with others, goals to protect oneself from ridicule, and reduced interest in warm and open connections with others. Hence, IP difficulties may be generally relevant in understanding hypochondriasis and health anxiety as suggested by Noyes and colleagues (2003), but some aspects of this domain might be associated with a more pronounced pattern of antagonistic interactions with others surrounding health concerns.

These results warrant continued examination of the IP characteristics and manifestations of healthy anxiety and hypochondriacal tendencies, and future research should include replications with different samples and with different methodologies (e.g., behavioral observations, report from social network members, and longitudinal designs). These findings may also have implications for treatment. As noted above, cognitive-behavioral treatments are effective in reducing health anxiety and hypochondriasis, and for reducing the related health utilization and expenditures (Seivewright, et al., 2008). A nascent literature on IP formulations and treatments suggests that expansion of the cognitive-behavioral approach may be worthwhile (Stuart & Noyes, 2006). In a study of individual-based cognitive-behavioral treatments for generalized anxiety disorder, Borkovec and colleagues (2002) found that treatment gains were maintained less well

among individuals who left treatment with higher levels of IIPs. Individuals with hypochondriacal tendencies are likely to benefit from intrapersonal/cognitive methods of treatment, but some features of hypochondriacal traits such as those involving disease conviction and feeling misunderstood might be indications for the addition of IP approaches to treatment.

Lastly, the results of this study suggest that hypochondriasis is a complex disorder with multiple components. The diagnostic criteria of the DSM-IV-TR (2000) do not capture all of these components, which hinders clinicians and researchers alike. There may be subtypes of hypochondriasis, especially in terms of reassurance seeking and how a hypochondriacal individual uses others to manage his or her concerns about health.

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